



## **CAMPUS FIRE SAFETY CODE TALK**

Campus Fire Safety e-NewZone

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### **“Are Your Sprinklers Ready for Back-to-School?”**

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So, it's back to school! As of this writing, students have moved into their dorms, orientation has been completed, safety meetings have taken place with the RA's so residents of the dorm understand what to do in the event of an emergency. It's time to get back to class. Are your sprinklers ready, too?

For many dorms, the building has sat dormant for the summer so very few issues need to be addressed (some cleaning, some painting perhaps) to gear up for the upcoming semester. For other buildings however, construction projects (new or remodels) are wrapped up and commissioned but is everything really done and accounted for? When it comes to sprinkler systems of course, the most important issue is the water supply valve open, thus maintaining water pressure in the system? We know that sprinkler systems perform exceptionally well but when they do fail, the majority of system failures are caused by a water supply control valve that is shut. Are the valves open? Next, have alarms (both waterflow and supervisory) been tested and verified as functional? These tests are usually stringently enforced and buildings cannot be occupied until the tests are completed. But there is much more to sprinkler system performance that may not be as obvious.

Beyond the system valves and alarms, my biggest concern has always been, “What is the condition of the sprinklers in the system”? Frequently the sprinklers themselves are overlooked. I have personally seen sprinklers in a wide variety of occupancies



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(including dorms) that are covered with dust, painted, corroded, obstructed or generally neglected. What can be done about this?

Let's start with testing; not flow tests or alarm tests, but an actual sprinkler performance test that is completed in a laboratory setting. Did you know that a sprinkler sample is required to be removed from the system and sent to a testing laboratory periodically? The sprinklers typically found in a residential environment (quick response and residential sprinklers in particular) need to be tested after 20 years of service and that test needs to be repeated every 10 years thereafter. That's a very aggressive test cycle, much more so than for standard response sprinklers that are usually installed in a much more hostile environment. The test sample should include 1% of the total number of sprinklers installed, but not less than four. Have you sent a sample of the sprinklers installed in your dorms for testing?

An annual inspection, specifically of sprinklers, is required in [NFPA 25-2017 Standard for the Inspection, Testing and Maintenance of Water Based Fire Protection Systems](#). This inspection focuses on the general condition of the sprinkler. For example, is the sprinkler damaged? Is it covered with dust, corroded or of more concern, is it painted (other than from the manufacturer - more on this later)? Is it installed in the proper orientation or has the fluid in the glass bulb leaked out? We sometimes see examples of upright sprinklers that have been installed in the pendent position or pendent sprinklers that have been installed in the upright position but, I have seen cases where even sidewall sprinklers have been installed upside down!

Installation mistakes aside, most of the other issues can be easily corrected. Up until recently, NFPA 25 simply required replacement of the sprinkler if it is covered in dust (a very common issue). Well, that is not always the best, most convenient or economical answer.

It is very common for building owners to ask, can I simply clean off the sprinkler? My answer to that question has always been, yes if it is just a light coating of dust that



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can easily be removed. But, if the sprinkler needs to be scrubbed, using a cleaner or worse; any type of solvent, then the answer is emphatically NO! Now NFPA 25 recognizes cleaning some light coating of dust from the sprinkler by use of either compressed air (not the industrial strength compressed air but a spray can of the same product you might use to clean your computer keyboard) or a vacuum. Just be careful and do not make contact with the glass bulb. Don't forget, quick response sprinklers and residential sprinklers the two types of sprinkler typically used in residential occupancies are manufactured with a 3mm diameter glass bulb and they are VERY fragile!

What if the glass bulb is empty? Closely examine the sprinkler to make sure that it is actually empty before replacing. In some cases the colored fluid in the glass bulb may have faded due to exposure to sunlight. While loss of color might be of concern (that is how we determine the temperature rating of the sprinkler), this does not necessarily drive the need to replace the sprinkler. Tests have shown that loss of color does not affect the operating characteristics of the sprinkler, however, loss of the fluid does and this must be corrected immediately since the sprinkler will not operate.

And finally, painting. I think painting is one of the biggest issues affecting sprinklers. A concealed sprinkler (a sprinkler with a flat, usually white cover plate), is the easiest to overlook as far as painting is concerned. A coat of paint applied in the field can delay sprinkler operation considerably and if this occurs the sprinkler must be replaced immediately. For other types of sprinklers, however, painting may impact more than the thermal element. Any paint that adheres to the sprinkler deflector can affect the spray pattern of the sprinkler and of equal concern is any paint that is applied to the seat of the sprinkler. If the paint is thin enough, it can migrate into the seat through capillary action and cause the seat to seal tightly. The laboratory test I mentioned earlier not only tests the sprinklers ability to respond to heat but it also measures the sprinklers ability to release the cap and seal with as little as 5 psi acting



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on it. Should paint enter the seal and cure, the seat can adhere to the sprinkler frame and not release at all. This situation is very difficult to discern from a visual inspection and therefore, if any paint is found on the sprinkler, the sprinkler should be replaced.

Keeping water supply valves open and testing sprinkler alarms is critical to maintaining an operable sprinkler system. But paying attention to the condition of the sprinkler itself is equally important. Make sure your sprinklers have been tested at the correct frequency and inspect them for proper orientation, corrosion and loading. Now, it's back to class!



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